

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A ~~solid~~ carbonylation catalyst ~~useful for producing esters and carboxylic acids from reactants including lower alkyl alcohols, lower alkyl alcohol generating compositions, and mixtures thereof in a vapor phase carbonylation process, said catalyst~~ comprising a solid component comprising a catalytically effective amount of platinum and tin associated with a solid catalyst support material and a vaporous component comprising a catalytically effective amount of a ~~vaporous component~~ comprising a halogen promoter, wherein said platinum and tin have a valency greater than zero.
2. (Currently Amended) The ~~solid~~ carbonylation catalyst according to Claim 1 wherein said solid support is carbon.
3. (Currently Amended) The ~~solid~~ carbonylation catalyst of claim 2 wherein said carbon support is activated carbon.
4. (Currently Amended) The ~~solid~~ carbonylation catalyst of claim 1 wherein said ~~catalyst~~ solid component includes from about 0.1 weight percent to about 10 weight percent each of said platinum and tin, as metals, and said weight percents are based on the total weight of the solid component.
5. (Currently Amended) The ~~solid~~ carbonylation catalyst of claim 1 wherein said ~~catalyst~~ solid component includes from about 0.1 weight percent to about 2 weight percent each of said platinum and tin, as metals, and said weight percents are based on the total weight of the solid component.
6. (Currently Amended) The carbonylation catalyst of claim 1 wherein said [a] vaporous halogen promoting component is selected from the group consisting of I₂, Br₂, and Cl₂, hydrogen halides, gaseous hydriodic acid, alkyl and aryl halides having up to 12 carbon atoms, and mixtures thereof.
7. (Currently Amended) The ~~solid~~ carbonylation catalyst of claim 6 wherein said vaporous halogen promoter is selected from the group consisting of hydrogen iodide, methyl iodide, ethyl iodide, 1-iodopropane, 2-iodobutane, 1-iodobutane, hydrogen bromide, methyl bromide, ethyl bromide, benzyl iodide and mixtures thereof.

8. (Currently Amended) The ~~solid~~ carbonylation catalyst of claim 1 wherein said platinum ~~component~~ is selected from the group consisting of platinum chloride, platinum oxide and mixtures thereof.
9. (Currently Amended) The ~~solid~~ carbonylation catalyst of claim 8 wherein said platinum chloride is selected from the group consisting of chloroplatinic acid; dichlorodiammine platinum; dichlorobis(triphenylphosphine) platinum; dichloro(1,5-cyclooctadiene) platinum; dichlorobis(benzonitrile) platinum, dihydrogen hexachloroplatinate and mixtures thereof.
10. (Currently Amended) The ~~solid~~ carbonylation catalyst of claim 8 wherein said tin ~~component~~ is selected from the group consisting of tin (II) chloride, alkyl carboxylate salts wherein at least one of the carbon atoms is bound to tin and said alkyl group has from 1 to 10 carbon atoms, aryl carboxylate salts wherein at least one of the carbon atoms is bound to tin and said aryl group has from 6 to 24 carbon atoms, tin (II) oxalate and mixtures thereof.
11. (Currently Amended) A carbonylation catalyst ~~useful for producing esters and carboxylic acids from reactants including lower alkyl alcohols, lower alkyl alcohol generating compositions, and mixtures thereof in a vapor phase carbonylation process, said catalyst comprising a solid component comprising from about 0.1 weight percent to about 10 weight percent of platinum, as metal, and from about 0.1 weight percent to about 10 weight percent of tin, as metal, associated with an activated carbon support material and a vaporous component comprising a catalytically effective amount of a halogen promoting component selected from the group consisting of hydrogen iodide, methyl iodide, ethyl iodide, 1-iodopropane, 2-iodobutane, 1-iodobutane, hydrogen bromide, methyl bromide, ethyl bromide, benzyl iodide and mixtures thereof, wherein said platinum and tin metals have a valency greater than zero and wherein said weight percents are based on the total weight of the solid component.~~
12. (Currently Amended) The ~~solid~~ carbonylation catalyst of claim 11 wherein said ~~catalyst includes solid component has~~ from about 0.1 weight percent to about 2 weight percent each of said platinum and tin.

13. (Currently Amended) The carbonylation catalyst of claim 11 wherein said platinum ~~component~~ is selected from the group consisting of chloroplatinic acid; dichlorodiammine platinum; dichlorobis(triphenylphosphine) platinum; dichloro(1,5-cyclooctadiene) platinum; dichlorobis(benzonitrile) platinum, dihydrogen hexachloroplatinate and mixtures thereof and said tin ~~component~~ is selected from the group consisting of tin (II) chloride, tin (II) oxalate and mixtures thereof.
- ~~14. The carbonylation catalyst of claim 11 wherein said reactant is methanol.~~
15. (Currently Amended) A carbonylation catalyst ~~useful for producing esters and carboxylic acids from reactants including lower alkyl alcohols, ether and ester derivatives of the alcohols, and ester-alcohol mixtures in a vapor phase carbonylation process, said catalyst~~ comprising a solid component having from about 0.1 weight percent to about 2 weight percent of platinum, as metal, and from about 0.1 weight percent to about 2 weight percent of tin, as metal, associated with an activated carbon support material and a vaporous component comprising a catalytically effective amount of a halogen promoting component selected from the group consisting of hydrogen iodide, methyl iodide, ethyl iodide, 1-iodopropane, 2-iodobutane, 1-iodobutane, hydrogen bromide, methyl bromide, ethyl bromide, benzyl iodide and mixtures thereof, wherein said platinum and tin metals have a valency greater than zero and wherein said weight percents are based on the total weight of the solid component.
16. (Currently Amended) The carbonylation catalyst of claim 15 wherein said platinum ~~component~~ is selected from the group consisting of chloroplatinic acid; dichlorodiammine platinum; dichlorobis(triphenylphosphine) platinum; dichloro(1,5-cyclooctadiene) platinum; dichlorobis(benzonitrile) platinum, dihydrogen hexachloroplatinate and mixtures thereof and said tin ~~component~~ is selected from the group consisting of tin (II) chloride, tin (II) oxalate and mixtures thereof.

17. (Currently Amended) A carbonylation catalyst ~~system useful for producing methyl acetate and acetic acid from reactants including methanol, dimethyl ether and methyl acetate, and mixtures thereof in a vapor phase carbonylation process, said catalyst system~~ comprising a solid ~~supported catalyst having~~ component comprising from about 0.1 weight percent to about 2 weight percent of platinum, as metal, selected from the group consisting of chloroplatinic acid; dichlorodiammine platinum; dichlorobis(triphenylphosphine) platinum; dichloro(1,5-cyclooctadiene) platinum; dichlorobis(benzonitrile) platinum, dihydrogen hexachloroplatinate and mixtures thereof, and from about 0.1 weight percent to about 2 weight percent of tin, as metal, selected from the group consisting of tin (II) chloride, tin (II) oxalate and mixtures thereof which are associated with an activated carbon support material and vaporous ~~second~~ component comprising at least one halide promoter selected from the group consisting of hydrogen iodide, methyl iodide, ethyl iodide, 1-iodopropane, 2-iodobutane, 1-iodobutane, hydrogen bromide, methyl bromide, ethyl bromide, benzyl iodide and mixtures thereof ~~and wherein a molar ratio of methanol or methanol equivalents to halide present is from about 1:1 to 10,000:1, and wherein said~~ weight percents are based on the total weight of the solid component.